TECHNICAL MEMORANDUM

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AN ECONOMIC ANALYSIS

OF THE BOXER BILL

APRIL 1992

BY

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a. Immediate individual retirement under Boxer Bill provisions, or

b. Individual retirement one year later without benefit of Boxer Bill provisions.

The conclusions, with respect to "bottom line" cost are:

a. The Boxer Bill will provide considerable immediate first year savings to the Government, and

b. The Boxer Bill will continue to provide savings to the Government for up to 40 years.

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ABSTRACT

The Boxer Bill presently before Congress proposes "to amend title 5, United States Code to allow Federal employees within any agency undergoing a major reorganization, reduction in force, or transfer of function to be credited with an additional 4 years (in age or length of service) in order to encourage voluntary retirements, and for other purposes."

This study applies a present value of money technique to the following options in attempting to assess Government costs if the Boxer Bill provisions were implemented:

a. Immediate individual retirement under Boxer Bill provisions, or

b. Individual retirement one year later without benefit of Boxer Bill provisions. The comparison of the above options represent a favorable case for the Government, in that an employee waiving immediate retirement is assumed to continue employment for only one more year.

The conclusions, with respect to "bottom line" cost are:

a. The Boxer Bill will provide considerable immediate first year savings to the Government, and

b. The Boxer Bill will continue to provide savings to the Government for up to 40 years.

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SUMMARY

This study addresses additional Government costs involved in immediate retirement of a married Government employee with maximum spousal survivor retirement coverage under provisions of the Boxer Bill versus comparable additional Government costs if retirement without benefit of Boxer Bill provisions were to occur one year in the future. To these costs are applied present value of money factors. Annual Government additional costs under both options are summarized up to forty (40) years, and compared. Utilizing this technique, it is demonstrated that up to 40 years retirement under the Boxer Bill is less costly to the Government than employment for one more year followed by retirement without benefit of Boxer Bill provisions. Furthermore, the combined life expectancy of both spouses based on conservative age estimates from Internal Revenue Service Actuarial Tables is 36.4 years after date of retirement.

Examples of savings to the Government for an individual Government employee utilizing the Boxer Bill are as follow:

Survival Years After Retirement	Average High-3 $	Cumulative Additional Government Cost: Under Boxer Bill ($)	Cumulative Additional Government Cost: Without Boxer Bill ($)	Savings ($)
5	30,000	23,928	41,922	17,994
10	30,000	30,767	43,637	12,870
20	30,000	39,656	45,866	6,210
40	30,000	47,313	47,785	472
20	20,000	26,437	30,577	4,140
30	20,000	29,724	31,401	1,677
20	40,000	52,874	61,154	8,280
30	40,000	59,448	62,802	3,354

1. STUDY AGENCY: Analysis Division, Directorate of Resource Management, U.S. Army Troop Support Command (TROSCOM), St. Louis, MO 63120-1798.

2. PURPOSE: This study is prepared to compare the additional individual personnel costs to the United States Government for Civil Service employees as they relate to the following options:

a. Immediate retirement allowing a bonus of four years extra service or age in annuity computation under provisions of the Boxer Bill now before Congress, or

b. Retirement one year from now without benefit of the bonus provided in the Boxer Bill.

3. SCOPE: The costs addressed in this study are limited to the additional costs between the two options indicated in paragraph 2 above. The costs addressed are only U.S. Government costs as they relate to individual Government employees. Specifically the employees' cost addressed would meet the following description:

a. General Schedule (GS) employment under the Civil Service Retirement System (CSRS).

b. Otherwise minimally eligible for retirement without penalty and without disability under CSRS provisions.

c. Married with maximum survivor benefits under retirement plan.

d. Service credit of 30 years or less for retirement annuity computation.

e. Retireable without penalty for underage or insufficient service.

Although this study addresses individuals described in paragraph 3a, b, c, and d above, the findings in this study might easily be applied to other categories of Government employees, e.g., those under Federal Employees

Retirement System (FERS), employees without survivors provisions in their annuities, employees with more than 30 years service, employees requiring less than four years to meet age or service requirements for retirement and Wage Board employees. In order to acquire the greatest applicability this study is developed utilizing percentages, to which any dollar amounts of average High-3 wages can be applied.

4. REFERENCES:

a. House of Representatives Bill 1820 (H.R. 1820) 16 April 1991, 102d Congress, 1st Session (Boxer Bill).

b. Supplement to OMB Circular No. A-76 (Revised) Executive Office of the President, Office of Management and Budget (OMB), August 1983, "Performance of Commercial Activities."

c. Memorandum, AMCMP-OE, 14 Nov 88, subject: Commercial Activities (CA) Cost Policy and Procedure Revisions.

d. Army Regulation (AR) 11-18, 7 May 1990, Headquarters Department of the Army, Army Programs, The Cost and Economic Analysis Program.

e. Publication 939, January 1990, Dept. of Treasury, Internal Revenue Service, Pension General Rule (Nonsimplified Method).

f. 1992 Federal Personnel Guide, Key Communications Group, Inc.

5. ACKNOWLEDGEMENTS: The following individuals, all members of the Analysis Division, Directorate of Resource Management, U.S. Army TROSCOM have graciously provided valuable and substantial support toward the preparation of this paper:

a. Mr. Ralph Crawford - Division Chief

b. Mr. Eugene L. Cariola - Branch Chief

c. Mrs. Kathleen Jaeger - Secretary.

6. INTRODUCTION:

a. Congresswoman Barbara Boxer has submitted to the House of Representatives H.R. 1820 a bill (herein referred to as the Boxer Bill) titled "The Federal Employee Retirement Incentive Act."

b. The Boxer Bill proposes "to amend title 5, United States Code, to allow Federal employees within any agency undergoing a major reorganization, reduction in force, or transfer of function to be credited with an additional 4 years (in age or length of service) in order to encourage voluntary retirements, and for other purposes."

c. Congresswoman Boxer states that:

> "H.R. 1820 would provide an enhanced retirement incentive by allowing federal employees--at or near retirement age at facilities undergoing reductions in force--to add four years of credit to their ages or years of service, or a combination of both not to exceed four years, for the purpose of calculating their pensions.
>
> "The advantages of this plan are 1) in this era of high unemployment, it is attractive to older employees who might not otherwise retire; 2) it saves the government the continued cost of older employees' maximum salaries; 3) it saves the government the relocation, retraining and severance costs associated with separating younger employees; and 4) it preserves jobs for those younger employees who still have years of productive service to contribute."

d. In an effort to evaluate the costs and/or savings involved with the Boxer Bill this economic analysis has been prepared. The economic analysis compares additional Government costs involved in an employee's immediate retirement under provisions of the Boxer Bill to additional Government costs

involved with one year more of that employee's Government service followed by retirement. This analysis is developed as percentages of the High-3 salary. The use of percentages assures the widest possible application of the analysis.

7. FACTS: The following facts are utilized in this study:

a. The CY 1992 GS retirement annuity is increased by 3.7% over the previous year.

b. The January 1992 average cost of living adjustment (COLA) for GS employees is 4.2%.

c. The January 1991 average COLA for GS employees was 4.1%.

d. The January 1990 average COLA for GS employees was 3.6%.

e. Discount factors for computing the present value of money for out years are as specified in AR 11-18 (reference 4d) page 63. These factors are indicated for project years 1 to 25 inclusive. For years 26 through 40 this study utilizes the following equation:

$$\text{Discount Factor} = \frac{1}{1.1^{(N - .5)}}, \text{ where}$$

N = number of out years to which the discount factor applies. For Calendar Year (CY) 1992, N = 1; for CY 1993, N = 2; for CY 1994, N = 3, etc.

f. One (1) year's additional service credit increases the annuity by 1.8% (2% - .2% for additional survivor coverage).

g. Four (4) years additional service credit increases the annuity by 7.2% (8% - .8% for additional survivor coverage).

h. This study does not address the sources of funds from which various types of payments are made. The so called "Color of Money" is a concern in which this study does not participate.

8. ASSUMPTIONS: The following assumptions are made in developing this analysis:

a. An employee eligible for retirement under the provisions of the Boxer Bill, on its failure to be enacted, would continue his/her Government employment for at least one more year.

b. Average High-3 salaries are based on calendar years (CY) 1989, 1990, 1991. The ratio of CY 1991 salaries to average High-3 CY salaries is 1.03884 to 1 (or 103.884%); utilizing the COLAs for January 1990 and January 1991 (Facts 7d and 7c) with CY 1989 as a base year the above ratio is developed:

Let X = CY 89 Base pay expressed as a % of Average High-3

1.036X = CY 90 Base pay expressed as a % of Average High-3

(1.036)(1.041)X = CY 91 Base pay expressed as a % of Average High-3

Given: Annual average of High-3 base pay = 100%

Then, 3 years of Average High-3 base pay = 300%

$$X + 1.036X + (1.036)(1.041)X = 300\%$$

$$X + 1.036X + 1.078476X = 300\%$$

$$3.114476X = 300\%$$

$$X = \frac{300\%}{3.114476} = 96.324\%$$

Base pay for CY 89 = 96.324% of Average High-3

Base pay for CY 90 = 1.036X = 99.792% of Average High-3

Base pay for CY 91 = 1.078476X = 103.884% of Average High-3.

c. New employees will not be hired to replace those accepting retirement under the provisions of the Boxer Bill.

d. The January 1992 federal annuitant COLA of 3.7% annually will continue at approximately that rate for the foreseeable future.

e. Benefits to Government employees are 29.55% of their wages as specified in reference 4b as amended by reference 4c. The 29.55% adjustment can be expressed as a multiplier of 1.2955.

f. The beginning date for computations either (1) retirement under Boxer Bill, or (2) continued service one additional year, is the beginning of the first pay period in January 1992 in which the 4.2% COLA is applied to earnings.

g. The High-3 years are the three years immediately prior to the beginning computation in para 8f above. For this study the High-3 time frame roughly coincides with CY 1989, CY 1990, and CY 1991.

h. One year of average retirement annuity adjusted for survivor benefits approximates that of an annuitant with 30 years service credit with a High-3 average of $30,000. Expressed as a percent of the average High-3 this annuity is approximately 51.5%. This percent is derived from reference 4f, pages 88 and 89 as follows:

$$\frac{12 \times 100 \times \text{Monthly annuity with survivor benefit}}{\text{Average High-3}} = \text{Annual \% of Average High-3}$$

$$\frac{1200 \times \$1288}{\$30{,}000} = \frac{1{,}545{,}600}{\$30{,}000} = 51.5\%$$ ($1288 is monthly annuity with survivor benefit)

i. Combined (husband and wife) life expectancy for new retirees on average does not exceed 36.4 years. This data is found in the Actuarial

Tables of Reference 4e, p14. This life expectancy assumes a male age of 50 and combined with a female age of 47 at the inception of retirement.

j. An employee continuing to work for another year without implementation of the Boxer Bill receives no promotions, grade increases, location increases, etc., within that year. That employee does receive the 4.2% COLA for CY 1992.

k. All percentages relate to the Average of High-3 wages immediately prior to the pay increase in January 1992. In this study the Average of High-3 is 100%.

l. The ratio of Average High-3 wages ending in January 1993 (A_3) to Average High-3 wages ending in January 1992 (A_2) is 1.040 to 1. This ratio is developed as follows (see Facts 7b, 7e, 7d):

$$\text{Let } Y = \text{CY 89 Base Pay}$$

$$1.036\,Y = \text{CY 90 Base Pay}$$

$$(1.036)(1.041)Y = \text{CY 91 Base Pay}$$

$$(1.036)(1.041)(1.042) = \text{CY 92 Base Pay}$$

$$A_2 = Y + (1.036)Y + (1.036)(1.041)Y$$

$$A_2 = 3.114476Y$$

$$A_3 = 1.036Y + (1.036)(1.041)Y + (1.036)(1.041)(1.042)Y$$

$$A_3 = 3.238248Y$$

$$\frac{A_3}{A_2} = \frac{3.238248Y}{3.114476Y} = 1.040$$

m. Total retirement costs to the Government are no greater for annuitants without survivors benefits than they are for those with maximum survivor benefits.

n. The benefit charge for retirement against a working employee covers Government medical insurance costs after retirement.

9. METHODOLOGY & PROCEDURE:

a. As stated in paragraphs 2 and 3 above the additional costs for the two options are addressed separately and then compared.

b. Appendix A addresses the additional Government costs (as percentages) for individuals accepting immediate retirement under the provisions of the Boxer Bill assuming it were passed into law. In order to simplify the analysis the initial retirement date is set at the first part of January 1992.

(1) Column A is a list of years over which costs are developed. The years range from 1 to 40. Year 1 is Calendar Year (CY) 1992; Year 2 is CY 1993; etc.

(2) Column B is an approximation of the first year's retirement annuity for an employee with 30 years service with full spousal survivor benefits expressed as a percentage of his/her average High-3 wages. Since this study addresses only additional costs, this cost appears only in Year 1 (CY 1992). (Assumption 8h)

(3) Column C represents the 4 year Boxer Bill bonus of 8% minus 10% of the 8% for survivor benefits, or 7.2%. The 7.2% is adjusted for the 3.7% annuity COLA (Assumption 8d) in the formula: $7.2\% \, (1.037)^{A-1}$. In year 1,

A-1 = Ø, therefore the quantity $(1.037)^{1-1} = (1.037)^{0} = 1$. Therefore, the Boxer Bill increment for the first year is 7.2%. In year 2 the Boxer Bill increment is COLA adjusted by $1.037^{(2-1)}$. Therefore the Boxer Bill increment is 7.2%(1.037) or 7.466%. This computation is iterated through 40 years.

(4) Column D is a total of Columns B and C. In year 1, it is the sum of 51.5% in Column B plus 7.2% in Column C or 58.7%. In year 2 there is no value in Column B, so Column C = Column D. Also Column C = Column D for years 3 through 40.

(5) Column E is the multiplier as described in Fact 7e to compute the present value of money.

(6) Column F is the product of Columns D and E, still expressed as a percent of the High-3 average.

(7) Column G is the sum of percentages of High-3 averages in Column F. Column G is a percent of the High-3 average. In 40 years it totals 157.709%.

c. Appendix B addresses the additional costs (as percentage) associated with 1 year's more Government employment without application of Boxer Bill provisions. In this case retirement is set at 1 year after January 1992, or January 1993. However, comparable years begin in 1992 at the same time as on Appendix A.

(1) As Appendix A Column A is a list of years, from 1 through 40, over which costs are developed. Year 1 is CY 1992.

(2) Column B is the ratio of CY 1991 wages to Average High-3 wages expressed as a percent. This figure in Year 1 is 103.884% as developed under Assumption 8b. Since this study analyses only 1 additional year of employment, this figure appears only in Year 1.

(3) Column C is a multiplier to adjust Column B for Benefits. These benefits as indicated in Assumption 8e are represented by the multiplier 1.2955.

(4) Column D is a multiplier to adjust Column B for the 4.2% January 1992 COLA (Fact 7b). As a multiplier it is expressed as 1.042.

(5) Column E is the product of Columns B, C, and D. The figure 140.234 is a percentage of the High-3 average. It is the total additional Government Cost occurring during year 1.

(6) Column F represents the addition to annuity computation for 1 additional year's employment of 2% minus 10% of 2% for survivor benefits, or 1.8% (Fact 7f). In accord with Assumption 8.1 the Average High-3 adjustment for retirement 1 year later is 1.040. As with the Boxer Bill bonus, this 1.8% is adjusted for the 3.7% annuity COLA (Assumption 8d). However, this adjustment does not begin until Year 2, since Year 1 is a year of employment. Therefore, the formula for this column does not apply to Year 1; but beginning in Year 2 it is: $1.040 \times 1.8\% \, (1.037)^{A-2}$, where A is the number of the year addressed.

(7) Column G is the multiplier described in Fact 7e to compute the present value of money.

(8) Column H is the product of Column E plus Column F times G. It

is the present value of money, expressed as a percent of the average High-3 as defined in Assumption 8k).

(9) Column I is the sum of percentages of High-3 averages in Column H. Column I is likewise a percent of the High-3 average. At the end of 40 years it totals 159.284%.

d. A comparison of Cumulative Additional Costs to the Government as indicated in Column G of Appendix A and Column I or Appendix B reveals that for every year up through Year 40 non-Boxer Bill costs exceed those utilizing the Boxer Bill. This observation becomes even more meaningful in the light of Assumption 8i, which provides the combined life expectancy of 36.4 years for married couples (male age 50 and female age 47) from the Actuarial Tables in IRS Publication 939 (Reference 4e).

10. FINDINGS:

a. A comparison of cumulative Government yearly costs reveals that for every year from year 1 through year 40, it is less costly to the Government to retire an employee under the Boxer Bill, than it is to continue his/her employment 1 more year and then allow him/her to retire.

b. The Actuarial Tables in IRS Publication 939 reveal that both spouses (male age 50, female age 47) have a combined life expectancy of 36.4 years.

c. Since Cumulative Government Costs are expressed in percent form the following are examples of dollar applications approximating those cumulative additional costs with 30 years service credit:

Year	$ Average High-3	Cumulative Additional Government Cost: Boxer Bill %	Boxer Bill $	Non-Boxer Bill %	Non-Boxer Bill $
5	30,000	79.760	23,928	139.740	41,922
10	30,000	102.557	30,767	145.456	43,637
15	30,000	119.530	35,859	149.712	44,914
20	30,000	132.185	39,656	152.885	45,866
30	30,000	148.619	44,586	157.005	47,102
40	30,000	157.709	47,313	159.284	47,785
20	20,000	132.185	26,437	152.885	30,577
30	20,000	148.619	29,724	157.005	31,401
40	20,000	157.709	31,542	159.284	31,857
20	40,000	132.185	52,874	152.885	61,154
30	40,000	148.619	59,448	157.005	62,802
40	40,000	157.709	63,084	159.284	63,714

11. CAVEAT:

a. Strictly speaking, the findings in this study are limited to Government employees within the following parameters:

(1) General Schedule (GS) employment under Civil Service Retirement System

(2) 30 year service credit

(3) Age 55 or older

(4) Married with maximum spousal annuity

(5) Retireable without penalty for being under age or having insufficient Government service

(6) January 1992 retirement under Boxer Bill versus January 1993 retirement without Boxer Bill utilization.

b. However, since the assumptions in this study are conservative it is presumable that the above findings also apply to employees:

(1) Under Wage Board

(2) Under Federal Retirement System (FERS)

(3) Who are retireable if allowed to use option of 4 years service or age credit

(4) Who do not require spousal annuity coverage

(5) Who are retireable with less than 30 years retirement credit

(6) Who continue Government employment for time periods greater than one year before retiring.

12. CONCLUSIONS:

a. If Government employees qualified to retire under the provisions of the Boxer Bill were permitted to do so, the Government would experience lower costs than it would if those employees were to continue working another year. These cost savings are additional to those advantages presented in the introduction, para 6c.

13. RECOMMENDATION:

It is recommended that appropriate Government organizations, legislative or executive, give consideration to the enactment of the Boxer Bill or to making comparable administrative arrangements not requiring legislative actions.

APPENDIX A

ADDITIONAL GOVERNMENT INDIVIDUAL PERSONNEL COSTS UTILIZING THE PROVISIONS OF THE BOXER BILL*

Year After Calendar Year 1991	Ratio 1st Year Annuity to Average of High 3	Additional Incremental Payments under Boxer Bill	Total Additional Costs to Gov't	Factor to Adjust Cost to Present Value of Money (AR 11-18)	Costs Adjusted to Present Value of Money	Cumulative Additional Cost to Government
	%	%	%		%	%
A	B	C $7.2(1.037)^{A-1}$	D B+C	E	F DxE	G ΣF
1	51.500	7.200	58.700	.954	56.000	56.000
2		7.466	7.466	.867	6.473	62.473
3		7.743	7.743	.788	6.101	68.574
4		8.029	8.029	.717	5.757	74.331
5		8.326	8.326	.652	5.429	79.760
6		8.634	8.634	.592	5.111	84.871
7		8.954	8.954	.538	4.817	89.688
8		9.285	9.285	.489	4.540	94.228
9		9.629	9.629	.445	4.285	98.513
10		9.985	9.985	.405	4.044	102.557
11		10.354	10.354	.368	3.810	106.367
12		10.737	10.737	.334	3.586	109.953
13		11.135	11.135	.304	3.385	113.338
14		11.547	11.547	.276	3.187	116.525
15		11.974	11.974	.251	3.005	119.530
16		12.417	12.417	.228	2.831	122.361
17		12.876	12.876	.208	2.678	125.039
18		13.352	13.352	.189	2.524	127.563
19		13.847	13.847	.172	2.382	129.945
20		14.359	14.359	.156	2.240	132.185
21		14.890	14.890	.142	2.114	134.299
22		15.441	15.441	.129	1.992	136.291
23		16.013	16.013	.117	1.874	138.165
24		16.605	16.605	.107	1.777	139.942
25		17.220	17.220	.097	1.670	141.612
26		17.857	17.857	.088	1.571	143.183
27		18.517	18.517	.080	1.481	144.644
28		19.203	19.203	.073	1.402	146.066
29		19.913	19.913	.066	1.314	147.380
30		20.650	20.650	.060	1.239	148.619
31		21.414	21.414	.055	1.178	149.797
32		22.206	22.206	.050	1.110	150.907
33		23.028	23.028	.045	1.036	151.943
34		23.880	23.880	.041	.979	152.922
35		24.763	24.763	.037	.916	153.838
36		25.680	25.680	.034	.873	154.711
37		26.630	26.630	.031	.826	155.537
38		27.615	27.615	.028	.773	156.310
39		28.637	28.637	.025	.716	157.026
40		29.696	29.696	.023	.683	157.709

* All percentages (%) relate to the average of the High-3 (CY 89 + CY 90 + CY 91) which equals 100%.

APPENDIX B

ADDITIONAL GOVERNMENT INDIVIDUAL PERSONNEL COSTS ASSOCIATED WITH ONE YEAR ADDITIONAL EMPLOYMENT WITHOUT THE BOXER BILL*

Year After Calendar Year 1991	Ratio 1991 Base Pay to Average High 3	Ratio Benefits Plus Base Pay to Base Pay	Multiplier to Convert CY 91 Personnel Cost to CY 92	Total Government Personnel Cost in CY 92	Additional Year Retirement Cost Adjusted for 1 Year Average High-3 Increase and for 3.7% Annuity Inflation	Factors to Adjust Costs to Present Value of Money (AR 11-18)	Costs Adjusted to Present Value of Money	Cumulative Additional Costs to Government
	%			%	%		%	%
A	B	C	D	E	F	G	H	I
				BxCxD	$1.040x1.8(1.037)^{A-2}$		(E+F)xG	Σ H
1	103.884	1.2955	1.042	140.234		.954	133.783	133.783
2					1.872	.867	1.623	135.406
3					1.941	.788	1.530	136.936
4					2.013	.717	1.443	138.379
5					2.088	.652	1.361	139.740
6					2.165	.592	1.282	141.022
7					2.245	.538	1.208	142.230
8					2.328	.489	1.138	143.368
9					2.414	.445	1.074	144.442
10					2.503	.405	1.014	145.456
11					2.596	.368	.955	146.411
12					2.692	.334	.899	147.310
13					2.792	.304	.849	148.159
14					2.895	.276	.799	148.958
15					3.002	.251	.754	149.712
16					3.113	.228	.710	150.422
17					3.228	.208	.671	151.093
18					3.348	.189	.633	151.726
19					3.472	.172	.597	152.323
20					3.600	.156	.562	152.885
21					3.733	.142	.530	153.415
22					3.872	.129	.499	153.914
23					4.015	.117	.470	154.384
24					4.163	.107	.445	154.829
25					4.317	.097	.419	155.248
26					4.477	.088	.394	155.642
27					4.643	.080	.371	156.013
28					4.815	.073	.351	156.364
29					4.993	.066	.330	156.694
30					5.177	.060	.311	157.005
31					5.369	.055	.295	157.300
32					5.568	.050	.278	157.578
33					5.774	.045	.260	157.838
34					5.987	.041	.245	158.083
35					6.209	.037	.230	158.313
36					6.438	.034	.219	158.532
37					6.677	.031	.207	158.739
38					6.924	.028	.194	158.933
39					7.180	.025	.180	159.113
40					7.446	.023	.171	159.284

* All percentages (%) relate to the average of the High-3 (CY 89 + CY 90 + CY 91) which equals 100%.

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